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09/854,393	05/11/2001	Horst Rumpf	DE000076	8218

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EXAMINER	
ORTIZ CRIADO, JORGE L	

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/854,393	RUMPF ET AL.	
	Examiner	Art Unit	
	Jorge L. Ortiz-Criado	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in **37 CFR 1.77(b)**, the specification of a utility application should include the following sections in order. As provided in **37 CFR 1.77(c)** Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 5-9, 12-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsin et al. U.S. Patent No. 6,580,579 in view of Hsin et al's Admitted Prior Art.

Regarding claim 1, Hsin et al. discloses an apparatus having a control circuit, which comprises a feed-forward filter arrangement (See Abstract; col. 2, lines 28-40; col. 3, lines 54-63; col. 4, lines 4-7; Fig. 2, ref. #, 230,232)

and a controller (See col. 2, lines 41-67; col. 4, lines 12-15; Fig. 2, ref. #214),

characterized in that an adaptation of the parameters of the feed-forward filter arrangement are adapted by an adaptation algorithm during operation of the apparatus (See Abstract ;col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-48; Fig. 2,5, re# 230)

Hsin et al. does not expressly disclose, the parameters of the controller adapted by an adaptation algorithm.

However, this feature is well known in the art and is evidenced by Hsin et al's Admitted Prior Art, wherein an adaptation algorithm is used to adapt the parameters of the controller (See col. 2, lines 6-12)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to adapt the parameters of the controller with an adaptation algorithm in order to during operation of the apparatus, the apparatus set the parameters in response to disturbance signals and by the adaptation algorithm the controller is able to cancel and reject the undesired disturbances in real time instantly when the apparatus operates under disturbance environments, obtaining the best possible control performance and reducing errors.

Regarding claim 3, the combination of Hsin et al. and the Hsin et al's admitted prior art would show wherein the apparatus includes a disk drive for storage disk media (See Abstract; Fig. 1,2),

in which vibrations and internal disturbances, which occur during operation of the apparatus, are compensated by the adaptation algorithm optimizing the parameters of the feed-forward filter arrangement and the parameters of the controller (See Abstract ; col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-53; Fig. 2,5).

Regarding claim 5, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the controller comprises

an input for receiving adapted control parameters, relative to variations in external disturbances of controlled device (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 4, lines 12-15; Fig. 2, ref. #214) and

a control variable output for supplying signals for controlling the controlled device responsive to both the error signal and the adapted control parameters (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 4, lines 12-15; Fig. 2, ref. #214, 216, 234)

Regarding claim 6, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the apparatus further comprises a storage media, in which vibrations and internal disturbances are compensated by the adaptation algorithm that adapts parameters of the feedforward filter arrangement, the parameters of the controller and the disturbance-variable feedforward (See Hsin et al col. 2, lines 6-12; col. 2, lines 41-67; col. 2, lines 6-12; col. 4, lines 12-15; Fig. 2)

Regarding claim 7, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the feedforward filter arrangement receives a disturbance signal from sensors and further comprising the disturbance signal being received by a computational element that performs the adaptation algorithm (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

wherein the computational element employs a current position reference from the storage device and an error reference from the storage device to adapt parameters of the feed forward filter arrangement and the controller (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

Regarding claim 8, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the computational element that performs the adaptation algorithm employs at least one control variable from the controller to adapt parameters of the feed forward filter arrangement and the controller (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

Regarding claim 9, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the controller and the feedforward filter arrangement are responsive to external events "such as" vibrations and temperature variations in components of the apparatus (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

Regarding claim 12, Hsin et al. discloses an apparatus for responding to effects on precision of positioning of a scanning element (See Abstract; col. 2, lines 28-40; col. 3, lines 54-63; col. 4, lines 4-7; Fig. 2) comprising:

a control circuit having a feedforward filter arrangement (See Abstract; col. 2, lines 28-40; col. 3, lines 54-63; col. 4, lines 4-7; Fig. 2, ref. #, 230,232);

a controller (See col. 2, lines 41-67; col. 4, lines 12-15; Fig. 2, ref. #214);

an adaptation algorithm (See Abstract ;col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-48; col. 4, line 54 to col. 7, line 16; Fig. 2,5, re# 230);

wherein parameters of the feedforward filter arrangement are adapted by the adaptation algorithm during operation of the apparatus (See Abstract ;col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-48; Fig. 2,5, re# 230)

Hsin et al. does not expressly disclose, the parameters of the controller adapted by an adaptation algorithm.

However, this feature is well known in the art and is evidenced by Hsin et al's Admitted Prior Art, wherein an adaptation algorithm is used to adapt the parameters of the controller (See col. 2, lines 6-12)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to adapt the parameters of the controller with an adaptation algorithm in order to during operation of the apparatus, the apparatus set the parameters in response of disturbance signals and by the adaptation algorithm the controller is able to cancel and reject the undesired disturbances in real time instantly when the apparatus operates under disturbance environments, obtaining the best possible control performance and reducing errors.

Regarding claim 13, the combination of Hsin et al. and the Hsin et al's admitted prior art would show a computational element, wherein the computational element performs the adaptation algorithm (See Abstract ;col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-48; Fig. 2,5, re# 230)

Regarding claim 14, the combination of Hsin et al. and the Hsin et al's admitted prior art would show wherein the controller comprises an error signal input, for receiving error signals responsive to operation of a controlled device; an input for receiving adapted control parameters, relative to variations in external disturbances of the controlled device; and a control variable output for supplying signals for controlling the controlled device responsive to both the error

signal and the adapted control parameters (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 4, lines 12-15; Fig. 2)

Regarding claim 15, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the apparatus further comprises a storage media, in which vibrations and internal disturbances are compensated by the adaptation algorithm that adapts parameters of the feedforward filter arrangement, the parameters of the controller and the disturbance-variable feedforward (See Hsin et al col. 2, lines 6-12; col. 2, lines 41-67; col. 2, lines 6-12; col. 4, lines 12-15; Fig. 2)

Regarding claim 16, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the feedforward filter arrangement receives a disturbance signal from sensors and further comprising the disturbance signal being received by a computational element that performs the adaptation algorithm (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

wherein the computational element employs a current position reference from the storage device and an error reference from the storage device to adapt parameters of the feed forward filter arrangement and the controller (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

Regarding claim 17, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the computational element that performs the adaptation algorithm employs at least

one control variable from the controller to adapt parameters of the feed forward filter arrangement and the controller (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

Regarding claim 18, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the controller and the feedforward filter arrangement are responsive to external events "such as" vibrations and temperature variations in components of the apparatus (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230)

Regarding claim 20, the combination of Hsin et al. and the Hsin et al's admitted prior art show wherein the apparatus further comprises a storage disk media, in which vibrations and internal disturbances are compensated by the adaptation algorithm that adapts parameters of the feedforward filter arrangement, the parameters of the controller and the disturbance-variable feedforward (See Hsin et al col. 2, lines 6-12; col. 2, lines 41-67; col. 2, lines 6-12; col. 4, lines 12-15; Fig. 2)

4. Claims 2, 4, 10-11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsin et al. U.S. Patent No. 6,580,579 in combination with Hsin et al's Admitted Prior Art and further in view of view of Ferguson et al. U.S. Patent No. 5,619,581.

Regarding claims 2 and 19, the combination of Hsin et al. and the Hsin et al's admitted prior art would show all the limitations based on claim 1 and 12 as outlined above.

The combination would show an adaptation algorithm, but does not expressly show that the adaptation algorithm is executed on a microprocessor, particularly a digital signal processor.

However this feature is well known in the art as evidenced by Ferguson et al., which discloses a control system for cancellation vibration whereby the system includes an adaptation algorithm executed by a microprocessor, particularly a digital signal processor (See col. 3, lines 35-66; Fig. 2)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to execute the adaptation algorithm on a microprocessor, particularly a digital signal processor to adjust the parameters of the feed-forward filter and the controller in order to optimize faster adaptation calculations. as suggested by Ferguson et al.

Regarding claim 4, Hsin et al. discloses a method for responding to effects on precision of positioning of a scanning element in a disk drive (See Abstract; col. 2, lines 28-40; col. 3, lines 54-63; col. 4, lines 4-7; Fig. 2, ref. #, 230,232), the method comprising:

sensing forces acting the disk drive (See Abstract ; col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-53; Fig. 2,5).

converting detected forces into disturbances signals (See Abstract ; col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-53; Fig. 2,5)

applying the disturbances signals to a feed-forward filter to obtain a disturbance variable (See Abstract ; col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-53; Fig. 2,5);

adjusting the disk drive for errors using the controller (See col. 2, lines 41-67; col. 4, lines 12-15; Fig. 2, ref. #214);

receiving references variables, error signals , and control variables (See Abstract ; col. 2, lines 28-40; col. 4, lines 10-15; col. 4, lines 41-53; Fig. 2,5)

Hsin et al. does not expressly disclose applying and adapted version of the disturbance signals as parameters to a controller ,

However, this feature is well known in the art and is evidenced by Hsin et al's Admitted Prior Art, wherein an adaptation algorithm is used to adapt the parameters of the controller applying an adapted version of the disturbance signals (See col. 2, lines 6-12)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to adapt the parameters of the controller with an adaptation algorithm in order to during operation of the apparatus, the apparatus set the parameters in response to disturbances signals and by the adaptation algorithm the controller is able to cancel and reject the undesired disturbances in real time instantly when the apparatus operates under disturbance environments, obtaining the best possible control performance and reducing errors.

The combination would show the adaptation of the controller parameters by using a "processor" (Something that processes things), where the adaptation calculation is executed (See Fig. 2, block 230), but

does not expressly show that the adaptation of the parameters is executed on a "processor"(Such as a microprocessor, digital signals processor-DSP, etc.) ,

However this feature is well known in the art as evidenced by Ferguson et al., which discloses a control system for cancellation vibration whereby the system includes an adaptation algorithm executed by a processor (See col. 3, lines 35-66; Fig. 2)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to execute the adaptation on a "processor", to adjust and/or altering the parameters of a feed-forward filter and the controller optimizing faster adaptation calculations, as suggested by Ferguson et al.

Regarding claim 10, The combination of Hsin et al., the Hsin et al's admitted prior art and Ferguson et al. shows the step of applying the adapted version of the disturbance signals as parameters to the controller further comprises applying an adapted version of the disturbance signals as parameters to the feed forward filter (See Hsin et al col. 2, lines 41-67; col. 2, lines 6-12; col. 3, line 25 to col. 4, line 52; Fig. 2, ref. #228, 230) .

Regarding claim 11, The combination of Hsin et al. and the Hsin et al's admitted prior art and Ferguson et al. shows the step of providing outputs from the processor to alter parameters of the feed forward filter and the controller employs reference variables, error signals, and control variables to alter parameters of the feed forward filter and the controller (See Hsin et al. Abstract ; col. 2, lines 28-40; col. 3, line 25 to col. 4, line 52; Fig. 2,5) .

Response to Arguments

5. Applicant's arguments filed 02/04/2005 have been fully considered but they are not persuasive.

Applicants argues that Hasin et al. reference does not teach or suggest adapt the parameter to the controller during operation of the apparatus.

The examiner cannot concur because Hasin et al. **clearly** recites adapting the parameters during operation of the apparatus, se for example last two lines of the abstract "**adjusting its parameters during operation".**

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case,

Hsing et al. teaches and clearly discloses adapting parameters **during operation** and also teaches that the controller its operated during the operation of the apparatus, it would have been obvious to one with ordinary skill in the art at the time of the invention to adapt the parameters of the controller with an adaptation algorithm as taught by Hsin et al's Admitted Prior Art, in order to during operation of the apparatus, the apparatus set the parameters in response of disturbance signals and by the adaptation algorithm the controller is able to cancel and reject the

undesired disturbances in real time instantly when the apparatus operates under disturbance environments, obtaining the best possible control performance and reducing errors, as taught by Hsing et al.

Applicants argues that Hsing et al. does not teach or suggest compensating vibrations and internal disturbances.

The examiner cannot concur because Hsing et al. clearly and specifically teaches, suggest and recites compensating for "**internal disturbances, vibrations**", see some example of such teachings: The title of the invention **"Disturbance rejection for disc drives, Abstract: "attenuating vibrations**", specification, col. 1, lines 15-19, "**attenuating vibrations**"; Fig. 2, "**external disturbance**", col. 1, lines 46-59, "**vibrations which are commonly caused in the drive**"

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). See above with respect to claim 1.

The prior art made of record and not relied upon is considered not only pertinent of to applicant's disclosure, but for the teachings of the knowledge generally available to one of ordinary skill in the art.

U.S. Patent Numbers: 5,043,863, 4,481,567, 4,766,552, 4,655,135; and Japanese Publication Numbers: 62-229403, 07-64605, 04-342001, which teaches **"an apparatus having a control circuit and a controller, characterized in that an adaptation of the parameters of the feed-forward filter arrangement are adapted by an adaptation algorithm during operation of the apparatus"**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge L. Ortiz-Criado whose telephone number is (571) 272-7624. The examiner can normally be reached on Mon.-Thu.(8:30 am - 6:00 pm),Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne R. Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SUSAN MCFADDEN
PRIMARY EXAMINER